ABSTRACT OF THE DISCLOSURE

The invention involves tunneling tips to their conducting surface, and specifically the deposition of a monolayer of fullerene C_{60} onto the conducting plate surface to protect the tunneling tip from contact. The Fullerene C_{60} molecule is approximately spherical, and a monolayer of fullerene has a thickness of one nanometer, such that a monolayer thereby establishing the theoretical distance desired between the MEMS' tunneling tip and the conducting plate. Exploiting the electrical conductivity of C_{60}, the tip can be accurately positioned by simply monitoring conductivity between the fullerene and the tunneling tip. By monitoring the conductivity between the tip and the fullerene layer as the tip is brought in proximity, the surfaces can be brought together without risk of contacting the underlying conducting surface. Once the tunneling tip is positioned at the one nanometer spacing, with only the monolayer of fullerene between the tunneling tip and the conducting plate, the monolayer of C_{60} can be broken down thermally and removed chemically leaving only the tunneling tip and the conducting plate at the ideal tunneling spacing. Alternatively, the properties of fullerene allow the tunneling process to occur directly across the fullerene monolayer.